Volume 211 1989

Contents

Editorial E1

Letters to the Editor

Search for a 12.59 ms pulsar in Cygnus X-3
Fegan, D.J., Cawley, M.F., Gibbs, K., Lamb, R.C., Lewis, D.A., Porter, N.A., Reynolds, P.T., Smyth, G., Weekes, T.C. L1

Broad-band spectrum of dMe star radio emission
Güdel, M., Benz, A.O. L5

A supernova at $z=0.28$ and the rate of distant supernovae
Hansen, L., Jørgensen, H.E., Nørgaard-Nielsen, H.U., Ellis, R.S., Couch, W.J. L9

The near-infrared NaI doublet in giant elliptical galaxies
Zhou Xu, Véron-Cetty, M.-P., Véron, P. L12

X-ray emission from γ-ray bursters
Hameury, J.M., Lasota, J.P. L15

Molecular clouds in irregular galaxies. I. An ultramassive complex in NGC 3077?
Becker, R., Schilke, P., Henkel, C. L19

The peculiar superluminal radio source 4C 39.25: observations and model
Marcaide, J.M., Alberdi, A., Elósegui, P., Schalinski, C.J., Jackson, N., Witzel, A. L23

Raman scattering as a diagnostic possibility in astrophysics
Nussbaumer, H., Schmid, H.M., Vogel, M. L27

Identification of the emission bands at λλ 6830, 7088
Schmid, H.M. L31

Cosmology

(RN) The Tully-Fisher relation and galaxy mass to light ratios
Phillipps, S. 259

Extragalactic astronomy

The mass density in our Galaxy. II. F dwarfs and K giants as density tracers
Crézé, M., Robin, A.C., Bienaymé, O. 1

An automated search for star clusters in the Magellanic Clouds. I. Description of the technique and application to a 6 square degree field near the bar of the LMC
Bhatia, R.K., MacGillivray, H.T. 9

A method to estimate the motion of unresolved VLBI components in extragalactic radio sources. The case of NRAO 140
Charlot, P., Hough, D.H., Lestrade, J.-F. 261

Linearly polarized radioemission from the anomalous arms in NGC 4258 (M 106)
Hummel, E., Krause, M., Lesch, H. 266

The extended emission line region of the active galaxy PKS 0521-36
Boisson, C., Cayatte, V., Sol, H. 275

A new radio continuum survey of the Magellanic Clouds at 1.4 GHz. II. The radio morphology, and thermal and nonthermal emission of the LMC
Klein, U., Wielebinski, R., Haynes, R.F., Malin, D.F. 280

Broad emission line profiles in Seyfert-1 galaxies: [O III]-wings from a transition zone
van Groningen, E., de Bruyn, A.G. 293

Emission line variation in the Seyfert galaxy Fairall 9 and the presence of broad [O III] emission
Stirpe, G.M., van Groningen, E., de Bruyn, A.G. 310

(RN) High spectral-resolution CO observations of NGC 6814 and NGC 7793
Brand, J., Wouterloot, J.G.A., Becker, R., Stirpe, G.M. 315

A search for electron-scattered wings in Hα in Seyfert-1 galaxies
van Groningen, E., van Weeren, N. 318

Galactic structure and dynamics

Formation of leading spiral arms in retrograde galaxy encounters
Thomasson, M., Donner, K.J., Sundelius, B., Byrd, G.G., Huang, T.-Y., Valtonen, M.J. 25

(RN) Concerning the preferred surface density of giant molecular clouds in the Galaxy
Milgrom, M. 37

Stellar clusters and associations

Metal abundances in metal-poor globular clusters
Gratton, R.G., Ortolani, S. 41

Formation, structure and evolution of stars

Asynchronous rotation in close binary systems with circular orbits
Habets, G.M.H.J., Zwaan, C. 56

The bolometric corrections and the $\dot{M}$: L relation for Wolf-Rayet stars
Smith, L.F., Maeder, A. 71

Studies of late-type binaries. I. The physical parameters of 44 ι Bootis ABC
Hill, G., Fisher, W.A., Holmgren, D. 81

Spots on T Tauri stars
Bouvier, J., Bertout, C. 99

Long- and short-term variability of the T Tauri Star RY Lupi
Gahm, G.F., Fischerström, C., Liseau, R., Lindroos, K.P. 115

Synthetic optical and ultraviolet spectra of stationary accretion disks
la Dous, C. 131

(RN) The triple star Kpr 99
Heintz, W.D. 156

In search of real solar twins. II
Cayrel de Strobel, G., Bentolila, C. 324

OH properties of Mira stars
Sivagnanam, P., Le Squeren, A.M., Foy, F., Tran Minh, F. 341

Absolute dimensions of eclipsing binaries. XIV. UX Mensae
Andersen, J., Clausen, J.V., Magain, P. 346

(RN) A model for radio emission from SN 1987 A
Manchanda, R.K., Sood, R.K., Waldron, L. 353

(RN) Evolution of the surface abundance of carbon in mass-exchanging binaries
De Greve, J.P., Cugier, H. 356

Integral constraints on convective overshooting
Roxburgh, I.W. 361

Stellar atmospheres

Coordinated observations of a large impulsive flare on UV Ceti
de Jager, C., Heise, J., van Genderen, A.M., Foing, B.H., Ilyin, I.V., Kilkenny, D., Avgoloupis, S., Marvridis, L., Cutispoto, G., Rodonò, M., Seeds, M.A., Yuen K.Ng, van Driel, W., Rabottu, X., Zodi, A.M., Vilas Boas, J.W.S., Scalise, E., Schaal, R.E., Kaufmann, P., Waelkens, C. 157

Rotational modulation and flares on RS Canum Venaticorum and BY Draconis stars. X. The 1981 October 3 flare on V711 Tauri (=HR 1099)
Linsky, J.L., Neff, J.E., Brown, A., Gross, B.D., Simon, T., Andrews, A.D., Rodonò, M., Feldman, P.A. 173

$v=3, J=1-0$ SiO maser emission from evolved stars
Alcolea, J., Bujarrabal, V., Gallego, J.D. 187

Strömgren photometry of late-type supergiants in the Small Magellanic Cloud
Richtler, T. 199

Shock phenomena in β Cephei stars
Crowe, R., Gillet, D. 365

Multiplets in multi-level non-LTE radiative transfer
Takeda, Y. 383

(RN) The ultra-violet spectrum of the peculiar early-type supergiant, HD 157038
Dufton, P.L., Lennon, D.J. 397

Diffuse matter in space (including HII regions and planetary nebulae)

Circumstellar dust around HR 4049: a critical test for theories of interstellar dust
Waters, L.B.F.M., Lamers, H.J.G.L.M., Snow, T.P., Mathlener, E., Trams, N.R., van Hoof, P.A.M., Waelkens, C., Seab, C.G., Stanga, R. 208

Fabry-Perot observations of [Fe X] and [Fe XIV] in the Cygnus Loop
Ballet, J., Caplan, J., Rothenflug, R., Dubreuil, D., Soutoul, A. 217

Collision of a high-velocity cloud with a dust cloud in the galactic halo
Rohlfs, R., Herbstmeier, U., Mebold, U., Winnberg, A. 402

The dynamics of the Calabash Nebula
Icke, V., Preston, H.L. 409

A refined study of the rate of the $N^+ + H_2 \rightarrow NH^+ + H$ reaction under interstellar conditions: implications for NH_3 production
Galloway, E.T., Herbst, E. 413

Observations of CO ($J=7-6$) in star-forming regions
Krügel, E., Densing, R., Nett, H., Röser, H.P., Schäfer, F., Schmid-Burgk, J., Schwaab, G., van der Wal, P., Wattenbach, R. 419

The Sun

Linear polarization of the hydrogen Hα line in filaments. I. Theoretical investigation
Bommier, V., Landi Degl'Innocenti, E., Sahal-Bréchot, S. 230

The magnetic field around quiescent solar prominences computed from observational boundary conditions
Démoulin, P., Malherbe, J.M., Priest, E.R. 428

Non-baryonic matter from the halo and the solar neutrino problem
Finzi, A., Harpaz, A. 441

A parametric survey of model solar fluxtubes
Steiner, O., Pizzo, V.J. 447

The internal magnetic field distribution and the diameters of solar magnetic elements
Zayer, I., Solanki, S.K., Stenflo, J.O. 463

Celestial mechanics and astrometry

Astrometric plate reductions with orthogonal functions
Brosche, P., Wildermann, E., Geffert, M. 239

Physical and chemical processes

s-Process studies on tin
Beer, H., Walter, G., Käppeler, F. 245

Dissipative processes in relativistic magnetohydrodynamics
Okamoto, I. 476

Photoionisation of the $B^+(^1S^e)$ ground state
Tully, J.A., Le Dourneuf, M., Zeippen, C.J. 485

Instruments, data processing, and computational methods

Three-reflection telescopes: two-mirror aplanatic solutions
Amoretti, M., Badiali, M., Preite-Martinez, A. 250